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# SYMPOSIUM ON NEW RESEARCH TOOLS

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## Introduction

THE state of civilization of prehistoric peoples is gaged by archeologists from a study of their tools. Thus we have the stone age, the bronze age, the age of steel. In each age its tools have indicated the activities of the people and, what is more important, the tools available have set an upper limit to achievement. The inventor of a new research tool opens up new vistas for exploration and achievement in the sciences and the arts.

There never has been a time when new research tools have been devised so rapidly as in the past two or three decades. Whether the development of tools has led to the astoundingly rapid unfolding of science or vice versa, is a question which has only one answer: scientific discovery and the development of research tools are mutually interdependent—they always go hand in hand. The perfection of the prism and lens led to the science of spectroscopy. Spectroscopy led to the development of vacuum spectrographs. Vacuum spectrographs opened up the extreme ultra-violet for spectroscopy. Extreme ultra-violet spectroscopy forced the development of Schumann plates and of total-reflection gratings. And thus it goes; science and its tools develop together.

It is particularly fitting that chemists and physicists should appear together on this program, for the most remarkable aspect of the science of the past twenty years has been the way in which chemists and physicists have played into each other's hands. This symposium is therefore symbolic of their teamwork in the fascinating game of unmasking Nature.

It is much more important to proceed now with the symposium than to listen to any more remarks by the chairman. However, I must take this opportunity to explain how the program was arranged. Last winter Dr. R. E. Wilson asked me to serve as chairman of a committee to arrange this symposium on "New Research Tools" which was, I understand, his original idea. I replied that I would gladly do so if he would serve on the committee. The committee which was formed included Roger Adams, A. A. Noyes, H. S. Taylor, F. G. Cottrell, Wilder D. Bancroft, Wm. D. Harkins, John Johnston, Willis R. Whitney, C. E. K. Mees, Harrison E. Howe, Arthur D. Little, and Robert E. Wilson, with Ernest H. Huntress as secretary. Each of these gentlemen sent to the secretary a list of suggestions of topics and speakers. This composite list was then sent back to the committee to get each member's order of preference. From the indications thus received, a tentative program was set up, which was sent back to the committee for criticism, further suggestion, and finally for approval.

I mention this procedure for two reasons. First, to point out that each paper on the program is an invited paper, and we were therefore precluded from accepting two or three excellent and interesting papers which were submitted by authors after the symposium had been announced. I hope that some other opportunity may offer itself to those authors for the presentation of their papers. Second, whatever success attaches to the work of the committee is due to the whole-hearted cooperation of the members whose names I read, and especially to the work of the committee's very capable secretary, Professor Huntress.

KARL T. COMPTON, *Chairman*